Adapted from: Smith, Margaret Schwan, Victoria Bill, and Elizabeth K. Hughes. “Thinking Through a Lesson Protocol: Successfully Implementing High-Level Tasks.”

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| **PART 1: SELECTING AND SETTING UP A MATHEMATICAL TASK (PREPARE)** | |
| What are your **mathematical goals** for the lesson? (i.e., what do you want  students to know and understand about mathematics as a result of this lesson?) | 2.NBT.8 Mentally add 10 or 100 to a given number 100-900, and mentally subtract 10 or 100 from a given number 100-900. |
| * What are your **expectations** for students as they work on and complete this task? * What **resources or tools** will students have to use in their work that will give them entry into, and help them reason through, the task? * How will the students work—   independently, in small groups, or in pairs—to explore this task?   * How will students record and report their work? | * Students will be adding and subtracting 10’s. This may be a mental task at first but should build to a mental level of fluency. * Students will use pencils, paper, base 10 blocks, unifix cubes, or any other manipulatives necessary to solve problem. * Students will work in pairs selected by the teacher. * Students will record their work in individual math journals and prepare a poster to share their findings to the class. |
| How will you introduce students to the activity so as to provide access to *all*  students while maintaining the cognitive demands of the task? | **LAUNCH**   * The teacher will serve chocolate milk to all students. The teacher will activate prior knowledge by discussing milk production in dairy cows. The teacher will activate prior knowledge by skip counting by 10’s with the whole class beginning at a number that is a non-10’s number. |

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| **PART 2: SUPPORTING STUDENTS’ EXPLORATION OF THE TASK (EXPLORE)** | |
| As students work independently or in small groups, what **questions** will you ask to—   help a group get started or make progress on the task?   focus students’ thinking on the  key mathematical ideas in the task?   assess students’ understanding of  key mathematical ideas, problem- solving strategies, or the representations?   advance students’ understanding  of the mathematical ideas? | * What is the task asking? What part do you not understand? Does it look right? Do you numbers match your thoughts and the task question? * What knowledge or information did you gain from reading the task?      * What would be a good starting point to begin solving? * Are there any noticeable patterns you can see that might help you solve the task?   Is there a faster way to solve the task? What would the answer be if the cows had moved in groups of 20? |
| How will you ensure that students remain **engaged** in the task?   What assistance will you give or what questions will you ask a  student (or group) who becomes  quickly frustrated and requests more direction and guidance is  solving the task?   What will you do if a student (or group) finishes the task almost  immediately? How will you  extend the task so as to provide additional challenge? | Have the student solve the same task with the cows coming to pasture in groups of 7. |

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| **PART 3: SHARING AND DISCUSSING THE TASK (DISCUSS/DEBRIEF)** | |
| How will you **orchestrate the class discussion** so that you accomplish your mathematical goals?   Which solution paths do you want to have shared during the  class discussion? In what order will the solutions be presented? Why?   What specific questions will you ask so that students will—  1. make sense of the  mathematical ideas that you want them to learn?  2. expand on, debate, and question the solutions being shared?  3. make connections among the different strategies that are presented?  4. look for patterns?  5. begin to form generalizations?  ***What will you see or hear that lets you know that all students in the class***  ***understand the mathematical ideas that***  ***you intended for them to learn?*** | * Teacher should select students that are comfortable and proficient with presenting to the class so others might follow their example of presenting. Teacher should also select groups to share from the concrete to the abstract so students can see the progression in thinking. Teacher ensures that both students will present a portion of the presentation.  1. What math concepts did you use to solve the task? Explain 2. Do you think your answer might have been different if the cows moved in groups of 20? Why? 3. What other strategy could you have used? Would it have been a better choice? Why? 4. Were there any number or procedure patterns? What? 5. Could you use the information you learned in this task to solve other problems? How and what? |

There are 103 cows eating grass in a pasture. Every hour, 10 cows come into the pasture together to eat. How many total cows are in the pasture eating after 5 hours?

Then, 10 cows leave every hour for 3 hours. How many cows are left eating in the pasture?